

dish purple, and those at the tip purplish blue, the whole being bordered on each side with black; sides of the neck and chest greyish white; abdomen, flanks, and under tail-coverts mottled white, grey, and light brown; back of the neck and upper surface bronzy brown; wings purplish brown; outer tail-feather on each side white, with a longitudinal streak of bronzy brown at the tip of the inner web; the next on each side the same, but the bronzy mark of greater extent; the central feathers entirely bronze, as in *Oxyppogon*.

Total length 6 inches, bill  $1\frac{1}{8}$ , wing  $3\frac{1}{4}$ , tail 3, tarsi  $\frac{1}{4}$ .

*Remark.*—This remarkably large and handsome species was discovered by Mr. H. Whitely at Tinta in Peru, at an elevation of 11,500 feet.

### 3. On the Fishes of Orissa.

By Surgeon F. DAY, F.Z.S., F.L.S.—Part I.

Having during the last few months been employed in conducting an inquiry into the present state of some of the freshwater fisheries on the eastern coast of India, I propose in the following paper giving a list of such species of fishes as I obtained in the province of Orissa. This portion of Bengal is comprised in one Commissionership, commencing in the south at the Chilka lake, and terminating at Jellapore in the north. I have also included a few species from the Cossye at Midnapore.

My investigations occupied December 1868 and the following month, and were instituted into the condition of every river which empties itself into the sea, also into the condition of many tanks, and the fisheries at the mouth of the Balasore river. Although I was not so fortunate as to obtain many species new to science, I was much gratified in procuring several of Hamilton Buchanan's and M'Clelland's fish whose existence has been doubted, or which have been referred to different species or genera or even renamed.

Before commencing the list I may remark upon the interesting fact that at last I have been a witness to fish being exhumed alive from beneath the mud of an Indian tank. On January 18, I was out fishing a tank, when I mentioned to an intelligent native official my wish to see fish exhumed from the mud of tanks. He remarked that the *Labyrinthici*, *Ophiocephalidæ*, and *Rhynchobdellidæ*, besides the *Saccobranchus* and *Clarias*, invariably retire into the mud of tanks when the water dries up, but denied that the Carps ever did so. Pointing to a neighbouring tank which was almost dry, he observed that we could at once make the examination. I promised a reward to whoever would let me see him exhume fish, and we adjourned to the spot.

The tank was about one acre in extent, and had not above 4 inches depth of water at its centre, whilst its circumference was sufficiently dried up to walk upon. The soil was a thick, consistent, bluish clay, and I refused to allow any one to go nearer the water than 30 paces. Six coolies set to work, and in less than five minutes

extracted from at least 2 feet below the surface of the mud, two specimens of the *Ophiocephalus punctatus*, Bloch, and three of the *Rhynchobdella aculeata*, Willughby. All of these fish were very lively, and not in the slightest degree torpid. They were covered over with a thickish adherent slime; and on dissecting them at a subsequent date, none contained ova. The natives stated that if I returned in about a month, by which time they expected the ground would be hard and caked, they were confident that we should still find fish below the surface.

1. LATES CALCARIFER, Bloch.

*Bekkut* (Ooriah).

This marine Perch ascends the rivers far beyond the influence of the tides, following those species which migrate to the fresh waters for the purpose of depositing their ova. In the Mahanuddi it is frequently taken at Benki, about 76 miles from the sea.

2. MESOPRION CHIRTAH, Cuv. & Val.

*Soosta* (Ooriah).

B. viii. D.  $\frac{11}{14}$ . P. 19. V.  $\frac{1}{5}$ . A.  $\frac{3}{9}$ . C. 17. L. l. 54. L. tr.  $\frac{14}{25}$ .  
Cæc. pyl. 6.

The form I obtained was the young *M. annularis*, C. & V., at Chanderpore, near the mouth of the Balasore river, where I examined the stake-nets on three different days during the spring tides, and obtained several species of fish and two sorts of sea-snakes, one of the latter of which bit my left heel whilst wading in the sea amongst the fishing-nets. I procured specimens, and I find it to be the *Enhydrina bengaliensis*, Gray. As the fangs drew blood, I am inclined to think that perhaps the reptile had discharged his venom on some fish previously to trying his teeth on my heel. I may mention that I found alive on the shore at the same place a very fine specimen of that handsome Sea-snake the *Pelamis bicolor*, Schneider.

3. MESOPRION SILLAOG, Cuv. & Val.

*Purruwa* (Ooriah).

B. vii. D.  $\frac{10}{15}$ . P. 17. V.  $\frac{1}{5}$ . A.  $\frac{3}{8}$ . C. 17. L. l. 50. L. tr.  $\frac{7}{12}$ .

Some fine specimens of this fish were taken in the sea at Chanderpore; I likewise saw many which had been dried in the sun.

4. AMBASSIS ALTA, Cuv. & Val.

*Chandee* (Ooriah).

B. vi. D.  $7\frac{1}{12-15}$ . P. 11. V.  $\frac{1}{5}$ . A.  $\frac{3}{13-15}$ . C. 17. L. l. 58.

Several spines about the head; six directed backwards on the pre-orbital; one moderately strong one is placed on the centre of the anterior margin of the orbit, and five more along its lower edge. On the centre of the posterior margin of the orbit is a similar spine, with

five more, decreasing in size, along its superior half. The horizontal limb of the præoperculum with a double denticulated margin.

*Hab.* Rivers and tanks of Orissa.

5. *AMBASSIS PHULA*, H. Buchanan.

*Goa chuppi* (Oorlah).

B. vi. D.  $7\frac{1}{14}$ . P. 11. V.  $\frac{1}{5}$ . A.  $\frac{3}{14}$ . C. 19.

Lower jaw much the longest. Three denticulations along the anterior edge of the orbit. Vertical limb of præoperculum with two or three small denticulations at its angle in the young, which become blunted by age; its horizontal limb with a double denticulated margin, which also becomes blunter in the adult. Other opercles entire. A large canine tooth on either side of symphysis of lower jaw.

Scales very minute.

Lateral line at first curves upwards, and becomes horizontal under the second dorsal fin.

*Hab.* Tanks in Orissa.

6. *AMBASSIS DUSSUMIERI*, Cuv. & Val.

*Chandee* (Oorlah).

B. vi. D.  $7\frac{1}{9-10}$ . P. 15. V.  $\frac{1}{5}$ . A.  $\frac{3}{9-10}$ . C. 17. L. 1. 27.  
L. tr.  $\frac{3}{6}$ .

Lateral line interrupted.

*Hab.* Mostly in rivers even within the influence of the tides, but is also found in tanks.

7. *AMBASSIS NAMA*, H. Buch.

*Cartcana* (Oorlah).

B. vi. D.  $7\frac{1}{14}$ . P. 11. V.  $\frac{1}{5}$ . A.  $\frac{3}{14}$ . C. 17.

Lower jaw much the longest. One denticulation at centre of the anterior margin of the orbit, and another at its posterior superior angle. Præorbital with three strong denticulations along its margin. Vertical limb of præoperculum entire, but two or three denticulations at its angle becoming blunter with age; its horizontal limb has its double edge scarcely denticulated. Canine teeth in lower jaw.

Lateral line entirely absent.

*Hab.* Tanks.

8. *AMBASSIS LALA*, H. Buch.

*Laal chandee* (Oorlah).

B. vi. D.  $7\frac{1}{11}$ . P. 11. V.  $\frac{1}{5}$ . A.  $\frac{3}{14}$ . C. 17.

Length of head a little above  $\frac{1}{3}$ , of pectoral  $\frac{1}{5}$ , of caudal  $\frac{2}{7}$  of the total length. Height of head  $\frac{1}{3}$ , of body  $\frac{1}{2}$  of the total length.

*Eyes.* Diameter  $\frac{2}{5}$  of length of head,  $\frac{2}{3}$  of a diameter from end of snout, 1 diameter apart,

Præorbital strongly serrated; horizontal limb of præoperculum with a double denticulated margin. No denticulations around the orbit. Scales minute.

Lateral line entirely absent.

Colours as described by Buchanan. The term *lala* is evidently derived from "*laal*," "red," the predominant colour.

*Hab.* Tanks in northern Orissa, where it grows to  $1\frac{1}{2}$  inch in length.

9. THERAPON TRIVITTATUS, H. Buch.

*Gahnu* (Oorlah).

These fish are frequently taken inside large medusæ.

*Hab.* Seas and estuaries in salt or brackish water.

10. LOBOTES SURINAMENSIS, Bloch.

*Chota bekkut* (Oorlah).

Not uncommon at Chanderpore in the sea.

11. SILLAGO SIHAMA, Forsk.

*Curama* (Oorlah).

B. vi. D. 10-11  $\left| \frac{1}{20-22} \right.$  P. 16. V.  $\frac{1}{5}$ . A.  $\frac{1}{22-23}$ . C. 17. L. 1. 74.  
Cæc. pyl. 4. Vert.  $\frac{19}{15}$ .

No elongated spine in dorsal fin. Teeth villiform.

This species about Coconada begins to give place to the next, which is most numerous in the sea at Orissa.

12. SILLAGO DOMINA.

*Gudji curama* (Oorlah).

B. vi. D. 9  $\left| \frac{1}{25} \right.$  P. 21. V.  $\frac{1}{5}$ . A.  $\frac{1}{26}$ . C. 19. L. 1. 90.  
Cæc. pyl. 4.

An elongated spine in the first dorsal fin.

*Teeth.* An external conical row in both jaws, with the four largest in the centre of the upper jaw, and several villiform rows posterior to them. A transverse semicircular band of villiform teeth in the palate.

13. MUGIL CORSULA, H. Buch.

*Kakunda* (Oorlah).

B. iv. D. 4  $\left| \frac{1}{8} \right.$  P. 13. V.  $\frac{1}{5}$ . A.  $\frac{3}{9}$ . C. 13. L. 1. 50. L. tr. 15.

The eyes of this species of Mullet are considerably elevated, their superior margin being above the level of the upper profile of the head.

This fish is very abundant in the rivers of Orissa, ascending far beyond tidal influence. I took considerable numbers above Cuttack, or 60 miles from the mouth of the river. It grows to a foot in length, and is excellent eating.

It swims with its snout on a level with the water, so that its eyes are above it; immediately it perceives any one approaching it rapidly darts down out of sight.

14. MUGIL AXILLARIS, Cuv. & Val.

*Magi* (Oorlah).

B. v. D. 4 |  $\frac{1}{8}$ . P. 15. V.  $\frac{1}{5}$ . A.  $\frac{3}{8-9}$ . C. 14. L. l. 42. L. tr. 14.

*Hab.* The sea and brackish waters, along with the *M. parsia*.

15. MUGIL PARSIA, H. Buch.

B. vi. D. 4 |  $\frac{1}{8}$ . P. 14. V.  $\frac{1}{5}$ . A.  $\frac{3}{8-9}$ . C. 14. L. l. 35. L. tr. 12.

I took this species in brackish water within tidal influence, but not in the sea.

It grows to 8 inches in length.

16. MUGIL BORNEENSIS, Bleeker.

B. vi. D. 4 |  $\frac{1}{8}$ . P. 15. V.  $\frac{1}{5}$ . A.  $\frac{3}{9}$ . C. 14. L. l. 34. L. tr. 13.

One specimen from Chanderpore in the sea.

17. SCATOPHAGUS ARGUS, Linn.

Found in the sea at Chanderpore, and also ascending the mouth of the river. Is not used as food.

18. CORVINA MILES, Cuv. & Val.

*Hab.* Chanderpore, in the sea.

I may here mention that I have satisfied myself that the species I named *C. neilli* in my 'Fishes of Malabar,' p. 55, is the *C. albida*, Cuv. & Val. I took specimens at Pondicherry and Madras. The rays &c. were

B. vii. D. 9 |  $\frac{1}{24-25}$ . A.  $\frac{2}{7}$ . L. l. 53. L. tr. 24.

Dr. Günther gives them as follows from the British Museum specimens:— D. 10 |  $\frac{1}{24}$ . A.  $\frac{2}{7}$ . L. l. 75. L. tr. 7/19.

19. CORVINA COITOR, H. Buch.

*Botahl, Putteriki* (Oorlah).

This species ascends rivers to far beyond tidal influence for breeding-purposes. I took it above Cuttack.

20. OTOLITHUS MACULATUS, Cuv. & Val.

*Birralli* (Oorlah).

B. vii. D. 10 |  $\frac{1}{20}$ . P. 19. V.  $\frac{1}{5}$ . A.  $\frac{2}{11}$ . C. 19.

This fish, hitherto recorded from Malaysia, is very common in the sea at Chanderpore, where specimens were taken up to 13 inches in length.

## 21. BOLA PAMA, H. Buch.

*Botul* (Oorlah).

B. vii. D. 10  $\left| \frac{1}{40-43} \right.$  V.  $\frac{1}{5}$ . A.  $\frac{2}{7}$ . C. 17. L. l. 70-80.  
 L. tr.  $\frac{9}{25}$ . Vert. 24. Cæc. pyl. 9.

It ascends rivers for breeding-purposes as far as does the *Corvina coitor*. It grows to 5 feet in length; and if cooked directly it is taken from the water, it is fair eating.

## 22. POLYNEMUS PARADISEUS, Linn.

*Tupsi* (Oorlah).

B. vii. D. 7  $\left| \frac{1}{15} \right.$  P. 15/vii. V.  $\frac{1}{5}$ . A.  $\frac{2}{12}$ . C. 19. L. l. 70.  
 L. tr.  $\frac{5}{14}$ . Cæc. pyl. 5.

Common in the sea at Chanderpore. I found only five cæcal appendages, and not ten, which is said to be the normal number.

## 23. POLYNEMUS SEXTARIUS, Bloch.

B. vii. D. 8  $\left| \frac{1}{12-13} \right.$  P. 15/vi. V.  $\frac{1}{5}$ . A.  $\frac{3}{12}$ . C. 17. L. l. 48.  
 L. tr.  $\frac{5}{10}$ .

Grows to 7 inches in length. Common in the sea at Chanderpore.

## 24. POLYNEMUS INDICUS, Shaw

B. vii. D. 8  $\left| \frac{1}{13-14} \right.$  P. 20/v. V.  $\frac{1}{5}$ . A.  $\frac{2-3}{11-12}$ . C. 17. L. l. 62-65.  
 L. tr.  $\frac{7}{13}$ . Vert.  $\frac{5}{19}$ .

One 30 lbs. weight taken at Chanderpore in the sea.

## 25. TRICHIURUS SAVALA, Cuv. &amp; Val.

*Droga puttiah* (Oorlah).*Hab.* Chanderpore, in the sea.

## 26. SCOMBER KANAGURTA, Cuv. &amp; Val.

B. vi. D. 8-9  $\left| \frac{1}{11} \right|$  v. P. 21. V.  $\frac{1}{5}$ . A.  $\frac{1}{11} \left| \right.$  v.-vii. C. 25. Vert.  $\frac{13}{16}$ .

No præanal spines.

*Hab.* Chanderpore in the sea.

## 27. CYBIUM GUTTATUM, Bloch.

Very common at Chanderpore.

*Hab.* Chanderpore, in the sea.

## 28. STROMATEUS ARGENTEUS, Bloch.

*Hab.* Chanderpore, in the sea.

## 29. STROMATEUS CINEREUS, Bloch.

*Hab.* Chanderpore, in the sea.

## 30. STROMATEUS NIGER, Bloch.

*Baal* (Ooriah).*Hab.* Chanderpore, in the sea.

## 31. CARANX ARMATUS, Forsk.

*Hab.* Chanderpore, in the sea.

## 32. CHORINEMUS LYSAN, Forsk.

One large specimen taken at Chanderpore, in the sea.

## 33. EQUULA RUCONIUS, H. Buch.

? *Equula splendens*, Cuv. & Val.*Tunker chandee* (Ooriah).B. v. D.  $\frac{8}{16-17}$ . P. 21. V.  $\frac{1}{5}$ . A.  $\frac{3}{14}$ . C. 19. L. 1. 68.

This species Dr. Günther has considered to be the same as the *E. interrupta*, Cuv. & Val., of which he observes, "No spines above the orbit; the cavity on the head is triangular, and twice and a half as long as broad. The lower præopercular margin is minutely serrated."

The following is a description of Hamilton Buchanan's fish, which I found common in the rivers of Orissa, far beyond tidal influence:—

Length of head  $\frac{1}{4}$ , of pectoral fin above  $\frac{1}{5}$ , of base of first dorsal  $\frac{1}{5}$ , of base of second dorsal  $\frac{1}{3}$ , of base of anal  $\frac{1}{3}$  of the total length. Height of head  $\frac{1}{3}$ , of body  $\frac{1}{2}$ , of first dorsal  $\frac{1}{6}$ , of second dorsal  $\frac{1}{6}$ , of ventral  $\frac{1}{10}$ , of anal  $\frac{1}{6}$  of the total length.

*Eyes.* Diameter nearly  $\frac{1}{3}$  of length of head, 1 diameter from end of snout, and 1 diameter apart.

Dorsal profile rises rather abruptly to opposite the anterior third of the orbit, and the occipital process ascends very abruptly, as shown in Hamilton Buchanan's figure.

Lower jaw inferiorly concave. Lips fleshy. Cavity on head lanceolate, half as wide as long. Lower margin of præoperculum with a strongly serrated edge. Two strong sharp spines, one over the anterior third of the orbit, the other above it and posterior to the nostril. The upper margin of the orbit serrated in the whole of its posterior two-thirds.

*Fins.* Dorsal spines strong, the second being one-third as high as the body, and slightly longer but not so strong as the second anal spine. Third anal spine serrated on the lower half of its anterior margin. Caudal forked, lower lobe slightly the longest.

Scales minute, but firmly adherent to the fish.

Lateral line in 68 fine tubes, and distinct from the scales. It first ascends slightly, and opposite to the end of the second dorsal it proceeds horizontally.

*Colours.* Silvery, shot with purple, and having dusky greyish bands descending from the back to the middle of the body. Snout covered with black spots. Fins yellowish. Eyes with a dark superior edging. A silver stripe is sometimes apparent along the side of the body.

## 34. GObIUS GIURIS, H. Buch.

*Gulah, Bali gulah* (Ooriah).*Hab.* Tanks and rivers throughout Orissa.

## 35. APOCRIPTES LANCEOLATUS, Bloch.

*Pittalu* (Ooriah).

This fish resides in fresh or brackish water, but not beyond tidal influence so far as I have observed; the best place to capture it is the mud at the sides of rivers. Considering its size, this is a most savage species, biting at any other fish that comes near it, and holding on with its teeth most tenaciously.

## 36. APOCRIPTES BATO, H. Buch.

*Rutta* (Ooriah).

This fish inhabits the same localities as the last. The largest specimen captured was  $5\frac{1}{2}$  inches in length. Natives take them in the following manner: they walk about in the mud, and as soon as they see or feel a fish moving they seize it with both hands.

## 37. EUCTENOGOBIOUS STRIATUS, Day.

*Mahturi, Naolli* (young, Ooriah).

The very young have black vertical bands, most apparent in the posterior half of the body. The first dorsal is occasionally stained orange.

*Hab.* Found in the rivers of Orissa.

## 38. BOLEOPHTHALMUS BODDAERTII, Pall.

*Apocryptes punctatus*, Day, P. Z. S. 1867, p. 941.

This fish climbs up rocks and on to pieces of wood, and appears to mostly inhabit muddy estuaries. It may be seen bobbing about in the soft mud or dirty water as the *Mugil corsula* does in rivers. In deep water it becomes drowned. It is as savage as the *Apocryptes lanceolatus*.

## 39. ELEOTRIS FUSCA, Bloch.

*Bundi, balah kera* (Ooriah).

*Hab.* Fresh and brackish waters along the coast, also extending its range beyond tidal influence.

## 40. ELEOTRIS AMBOINENSIS?, Bleeker.

*Gagi balah kera* (Ooriah).B. iv. D.  $6\frac{1}{8}$ . P. 17. V.  $\frac{1}{5}$ . A.  $\frac{1}{8}$ . C. 13. L. l. 28. L. tr. 15.

Length of head  $\frac{1}{3}$ , of pectoral  $\frac{1}{5}$ , of base of first dorsal  $\frac{1}{8}$ , of base of second dorsal  $\frac{1}{8}$ , of base of anal  $\frac{1}{8}$ , of caudal  $\frac{1}{6}$  of the total length. Height of head  $\frac{1}{7}$ , of body  $\frac{1}{5}$ , of first dorsal  $\frac{1}{8}$ , of ventral  $\frac{1}{8}$ , of anal  $\frac{1}{8}$  of the total length.

*Eyes.* Diameter  $\frac{2}{9}$  of length of head,  $1\frac{1}{4}$  diameter from end of snout,  $1\frac{1}{4}$  diameter apart.

Head broad, depressed; snout produced. The greatest width is opposite the opercles. There is a considerable rise from the snout to the base of the first dorsal.

Lower jaw the longest. The maxilla extends posteriorly to beneath the centre of the orbit. A finely serrated ridge along the superior and posterior edges of the orbit, from which in the adult it is divided by one or two rows of scales. This serrated ridge is continued towards the snout, dividing opposite the nostrils and enclosing an irregular lanceolate space which extends close to the margin of the upper lip.

Teeth in numerous fine villiform bands, those on the outer row being slightly enlarged.

*Fins.* Base of pectoral rather muscular, the fin wedge-shaped, rays not silk-like. Caudal cut square.

Scales ctenoid, but cycloid on the chest; they extend as far forward as the snout.

*Colours.* Of a blackish stone. Fins black, second dorsal and caudal edged with white. Pectoral also white, with the exception of two black blotches at its base.

Specimens were captured up to  $2\frac{1}{2}$  inches in length in the Balasore river. It is said never to be found in salt water.

This species may be the same as Dr. Bleeker's fish from Amboina. Still in this Indian specimen there are serrated ridges extending along the summit of the head and on to the snout, whilst the pectoral rays are not silk-like.

#### 41. AMBLYOPUS CÆCULUS, Bloch.

This species ascends rivers as far as tidal influence extends, even into fresh water. It is found in the same situations as the *Apocryptes*, and captured in the same way.

#### 42. BADIS BUCHANANI, Cuv. & Val.

*Boondei, kahli bundahni* (Ooriah).

B. vi. D.  $\frac{16-17}{8-9}$ . P. 12. V.  $\frac{1}{5}$ . A.  $\frac{3}{6-7}$ . C. 16. L. l. 26-28.  
L. tr.  $\frac{3}{5}$ . Cæc. pyl. 0.

Air-bladder large and simple.

*Hab.* Common in tanks in Orissa, up to 3 inches in length.

#### 43. NANDUS MARMORATUS, Cuv. & Val.

*Bodosi, Gossiporah* (Ooriah).

*Hab.* Rivers and tanks.

#### 44. ANABAS SCANDENS, Dald.

*Corvu* (Ooriah).

In Madras the species of *Anabas* has no cæcal pylori, and its body is banded.

At Tranquebar and Pondicherry, to the south of Madras, and

Ganjam and Orissa to the north, every specimen dissected had three caecal pylori, as stated by Cuvier. Placing the two varieties together, there does not appear to be any difference apparent externally, except in the coloration.

In the Ganjam district one was captured of a deep orange-colour, it appeared to be quite healthy, and the fishermen asserted that this change in colour is not uncommon.

45. *TRICHOGASTER FASCIATUS*, Bloch.

*Kussuah* (Oorlah).

*Hab.* Common in tanks.

46. *OPHIOCEPHALUS MARULIUS*, H. Buch.

*Saal* (Oorlah).

The coloration of these fish widely differs from the Madras specimens, and the ocellated blotch on the caudal was as distinct in a specimen 16 inches long as in the young.

47. *OPHIOCEPHALUS STRIATUS*, Bloch.

*Sola* (Oorlah).

*Hab.* Common in tanks and canals.

48. *OPHIOCEPHALUS GACHUA*, H. Buch.

*Cheyung* (Oorlah).

*Hab.* Found in tanks, canals, and sluggish rivers.

49. *OPHIOCEPHALUS PUNCTATUS*, Bloch.

*Cartua gorai* (Oorlah).

*Hab.* Found in tanks, canals, and sluggish rivers.

50. *RHYNCHODELLA ACULEATA*, Bloch.

*Gutti* (Oorlah).

*Hab.* Rivers and tanks.

51. *MASTACEMBLUS PANCALUS*.

*Turi, Bahru* (Oorlah).

*Hab.* Rivers and tanks.

52. *MASTACEMBLUS ARMATUS*, Lacép.

*Barm, Bummi* (Oorlah).

*Hab.* Rivers and tanks.

53. *ETROPLUS SURATENSIS*, Bloch.

*Cundahla* (Oorlah).

*Hab.* Found in tanks in the southern portion of Orissa near the sea-coast.

## 54. CLARIAS MAGUR, H. Buch.

*Magur* (Ooriah).*Hab.* Tanks.

## 55. SACCOBRANCHUS SINGIO, H. Buch.

*Singi* (Ooriah).*Hab.* Tanks.

## 56. WALLAGO ATTU, Bloch.

*Boalli, Ballia, Moinsia ballia* (Ooriah).*Hab.* Rivers and tanks.

## 57. CALLICHOUS CHECKRA, H. Buch.

*Pobtah* (Ooriah). "Butterfish" of Europeans.*Hab.* Rivers and tanks.

## 58. EUTROPICHTHYS VACHA, H. Buch.

B. xi. D.  $\frac{1}{7}$  | 0. P.  $\frac{1}{14}$ . V. 6. A.  $\frac{3}{40-47}$ . C. 17.*Butchria* (Ooriah).

Cleft of mouth extending in the adult to behind and beneath the posterior extremity of the orbit.

*Teeth.* Villiform teeth in a triangular spot on the vomer, and in a long pyriform shape on the palate; the whole of these with those on the upper jaw are so closely set together that it may give the appearance on a superficial examination that there are "no teeth on the palate," as remarked by Dr. Günther.

## 59. PSEUDEUTROPIUS ATHERINOIDES, Bloch.

*Battuli, Jemmi carri, Bipotasse* (Ooriah).*Hab.* Rivers and tanks.

## 60. PSEUDEUTROPIUS MURIUS, H. Buch.

*Eutropius? murino*, Günth. Cat. v. p. 54.*Motusi* (Bengali).D.  $\frac{1}{7}$  | 0. P.  $\frac{1}{11}$ . V. 6. A.  $\frac{4}{35}$ . C. 17.

Snout rounded, upper jaw overhanging the lower to a slight extent. The angle of the mouth is under and close to the anterior third of the orbit. Nasal cirrus extends from between the two nostrils to opposite the posterior margin of the orbit. Maxillary cirrus arises opposite the centre of the anterior margin of the orbit, and extends to the base of the pectoral fin. The four mandibular cirri arise on a transverse line just behind the lower lip, and extend to slightly behind the vertical from the posterior margin of the orbit. Eyes lateral.

Out of sixteen specimens, the largest was 6 inches; it, however, was said to grow to a greater size. Those I obtained were from the Cossy at Midnapore.

## 61. PSEUDEUTROPIUS GARUA, H. Buch.

*Punia buchua* (Oorlah). *Pultosi* (Bengali).

B. vi. D.  $\frac{1}{6}$  | 0. P.  $\frac{1}{11}$ . V. 6. A.  $\frac{3-4}{26-30}$ . C. 17.

This species forms the type of the genus *Schilbeichthys*, Bleeker, which differs from the *Pseudeutropius* chiefly in having no second or adipose dorsal fin.

I have taken a large number of the young of this species from 4 to 9 inches in length, and find that the adipose dorsal, though small, is distinct in the fry; but as the size of the specimens increases up to 6 or 7 inches it has either almost or entirely disappeared, and is invariably absent in the adult.

I therefore consider the species to be a *Pseudeutropius*; for the difference which exists in the nostrils between it and some others of the genus is insufficient for more than a specific division.

*Hab.* Rivers of Orissa and the Cossye at Midnapore.

## 62. AILIA BENGALIENSIS, Gray.

*Puttuli*, *Bounce puttli* (Oorlah).

*Hab.* Rivers and tanks.

## 63. PANGASIUS BUCHANANI, Cuv. &amp; Val.

*Hab.* Ascends rivers far beyond tidal influence.

## 64. SILUNDIA GANGETICA, Cuv. &amp; Val.

*Jillung*, *Sillund* (Oorlah).

*Hab.* Taken in the same places as the last.

## 65. MACRONES CAVASIUS, H. Buch.

*Guntea*, *Cuntea* (Oorlah).

*Hab.* Rivers and tanks.

## 66. MACRONES AOR, H. Buch.

*Alli*, *Arriah alli*; if young, *Gugah alli* (Oorlah).

*Hab.* Rivers and tanks.

## 67. MACRONES TENGARA, H. Buch.

*Bikuntia* (Oorlah).

*Hab.* Rivers and tanks.

## 68. MACRONES CORSULA, H. Buch.

*Punjab gagah* (Oorlah).

B. x. D.  $\frac{1}{7}$  | 0. P.  $\frac{1}{9}$ . V. 6. A.  $\frac{3}{8}$ . C. 17.

Hamilton Buchanan has given an engraving of this species; but the description was omitted from the 'Fishes of the Ganges.'

Length of head  $\frac{1}{4}$ , of pectoral  $\frac{1}{6}$ , of base of first dorsal  $\frac{1}{9}$ , of base of adipose dorsal  $\frac{1}{16}$ , of base of anal  $\frac{1}{11}$ , of caudal  $\frac{1}{6}$  of the total

length. Height of head  $\frac{1}{8}$ , of body  $\frac{1}{6}$ , of first dorsal  $\frac{1}{6}$ , of adipose dorsal  $\frac{1}{10}$ , of ventral  $\frac{1}{8}$ , of anal  $\frac{1}{8}$  of the total length.

*Eyes.* Diameter  $\frac{1}{7}$  of length of head, 2 diameters from end of snout, 2 diameters apart.

Mouth antero-inferior; upper jaw the longest, its posterior extremity does not reach so far as to below the centre of the orbit. Nasal cirri extend to opposite the middle of the orbit, maxillary cirri to the base of the anal fin, the external mandibular to the base of the pectoral, and the internal to opposite the posterior extremity of the præoperculum. The central longitudinal groove along the summit of the head reaches to the base of the occipital process, which latter is short its whole length, not being equal to one diameter of the orbit.

*Fins.* Dorsal spine slender and equals half the length of the head in extent; it is slightly serrated posteriorly in its upper fourth. Pectoral spine strong, flattened, rugose externally, and serrated in its whole extent internally; it is slightly longer than the dorsal spine. Caudal deeply forked, upper lobe the longest.

Lateral line ceases at the base of the caudal fin.

*Colours.* Greyish brown superiorly, dirty white inferiorly. Fins greyish, stained with black, several vertical rows of black spots along the anterior portion of the lateral line.

Three specimens obtained from the Mahanuddi river at Cuttack, the longest being 8 inches.

69. RITA KUTURNEE, Sykes.

*Rita buchmanii*, Bleeker.

*Mussayahri, cunta gagah* (Ooriah).

*Hab.* Rivers of Orissa.

70. ARIUS THALASSINUS, Rüpp.

*Cuntea* (Ooriah).

At Chanderpore large numbers were taken in the sea; some were of a very large size. They are much esteemed by the natives as food.

71. HEMIPIMELODUS CENIA, H. Buch.

*Jungla* (Bengali).

This species appears to have been entirely overlooked in the 'Catalogue of Fishes.'

B. vi. D.  $\frac{1}{6-7}$  | 0. P.  $\frac{1}{7}$ . V. 6. A.  $\frac{3}{10}$ . C. 17.

Length of head  $\frac{1}{5}$ , of pectoral  $\frac{1}{6}$ , of base of first dorsal nearly  $\frac{1}{8}$ , of base of adipose dorsal  $\frac{1}{10}$ , of base of anal  $\frac{1}{10}$ , of caudal  $\frac{1}{5}$  of the total length. Height of head  $\frac{1}{8}$ , of body  $\frac{1}{8}$ , of first dorsal  $\frac{1}{8}$ , of ventral nearly  $\frac{1}{8}$ , of anal  $\frac{1}{8}$  of the total length.

*Eyes.* High, covered by skin, diameter  $\frac{1}{3}$  of length of head, 1 diameter from end of snout, 1 diameter apart.

Body fusiform, with compressed sides. A considerable rise from the snout to above the orbit. Snout overhanging the mouth, upper

jaw the longest, the angle of the mouth is situated about midway between the snout and the anterior margin of the orbit. Maxillary cirrus osseous in its basal half; it extends nearly to the base of the pectoral fin. The four mandibular cirri arise in a transverse line just behind the margin of the lower jaw; they only extend to opposite the middle of the orbit. The occipital process is one-third as wide at its base as it is long; it extends to the basal bone of the first dorsal fin. The superior longitudinal groove is wide, but rather shallow, becoming indistinct. For a short distance opposite the posterior margin of the orbit, its upper portion extends nearly to the base of the occipital process, which, as observed by Buchanan, may be regarded as a point from which seven bony ridges arise. The upper surface of the head granulated. Nostrils large and placed close together; no well-developed valve to the posterior one.

*Teeth.* Five in both jaws, none on the palate.

*Fins.* Dorsal spine strong, anteriorly rugose. Pectoral spine somewhat stronger and of the same length as the dorsal; it is serrated internally, rough externally. The ventrals arise posterior to the vertical from the last dorsal rays. Caudal deeply forked.

Lateral line ceases at the base of the caudal fin.

*Colours.* Yellowish bronze, becoming silvery on the abdomen; three dark bands over the head, and four more over the back, descending as low as the lateral line. A black edging to the caudal, and a black blotch on each lobe. A dark mark across the dorsal fin.

It grows to about 3 inches in length, and is abundant in the Cosye river at Midnapore.

72. BAGARIUS YARRELLII, Sykes.

*Sahlun, Cart cuntea* (Oorlah).

*Hab.* Rivers of Orissa.

73. GAGATA TYPUS, Bleeker.

*Callomystax gagata*, Günther.

This species was Dr. Bleeker's type of the genus *Gagata*, of which Dr. Günther remarks, "Dr. v. Bleeker does not appear to have been acquainted with this fish; so that not only the characters of the genus which he proposed for it are incorrect, but it is also improperly referred to the 'phalanx' of *Arii*, and to the 'stirps' of *Bagrini*." He therefore renamed the genus, taking the same species as his type!

The air-bladder is divided into two portions, and enclosed in a bony capsule formed from the bodies of the anterior vertebræ.

It grows to 1 foot in length, and is common in the rivers of Orissa.

74. BELONE CANCELIA, H. Buch.

*Gungituri* (Oorlah).

*Hab.* Common in rivers and tanks.

## 75. HEMIRAMPHUS ECTUNTIO, II. Buch.

*Gungituri* (Ooriah).D.  $\frac{2}{12}$ . P. 11. V. 6. A.  $\frac{2}{13}$ . C. 15. L. l. 52. L. tr. 7/4.

Length of head  $\frac{1}{3}$ , of pectoral  $\frac{1}{10}$ , of base of dorsal  $\frac{1}{3}$ , of base of anal  $\frac{1}{10}$ , of caudal  $\frac{1}{4}$  of the total length. Height of head  $\frac{1}{12}$ , of body  $\frac{1}{10}$ , of dorsal  $\frac{1}{15}$ , of ventral  $\frac{1}{20}$ , of anal  $\frac{1}{12}$  of the total length.

*Eyes.* From  $1\frac{1}{2}$  to 2 diameters from the posterior extremity of the opercle, and 1 diameter apart.

Præorbital one-third longer than high. Upper jaw nearly triangular, its base slightly longer than its length; it is keeled along its central line.

Teeth in both jaws, also on palatines.

*Fins.* Dorsal commences somewhat in advance of the anal; the ventral nearly midway between the posterior margin of the orbit and the base of the caudal fin, which last is lobed, the lower being the longest.

Scales scarcely deciduous, covering the body, and existing between the orbits and over the præorbital; none on the bases of the fins.

Lateral line runs the lower fourth of the abdomen.

*Colours.* Greenish above, silvery below. A burnished silvery line extends from above the orbit to the centre of the caudal fin; it is widest over the anal, where it has a dark edge along its upper margin. Dorsal and caudal stained at their edges.

This fish is very numerous in the rivers of Orissa; it has, however, been placed amongst the "doubtful species" in the Catalogue of the British Museum.

## 76. HAPLOCHEILUS PANCHAX, II. Buch.

*Kanakuri* (Ooriah).*Hab.* Tanks and rivers throughout Orissa.

## 77. HAPLOCHEILUS MELASTIGMA, M'Clelland.

*Panchax cyanophthalmus*, Blyth.D.  $\frac{3}{5}$ . P. 11. V. 6. A.  $\frac{2}{20}$ . C. 13. L. l. 29. L. tr. 13.*Hab.* This species is not uncommon in tanks in Orissa.

#### 4. Descriptions of some new Suctorial Annelides in the Collection of the British Museum. By W. BAIRD, M.D., F.R.S., &c.

##### Genus BRANCHELLION, Savigny.

###### 1. BRANCHELLION INTYBIFOLIUM, Baird.

Body elongate, very concave ventrally, convex dorsally, consisting of about 48 segments, which are transversely striated on the back. Neck distinct from the body, consisting of 10 or 12 short, narrow segments. Oral sucker small. Ventral sucker large, circularly